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BETH AHLERING and CLIVE SMALLMAN

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The Judge Institute of Management Studies
Trumpington Street
Cambridge CB2 1AG

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BETH AHLERING¹ and CLIVE SMALLMAN²

University of Cambridge
Judge Institute of Management Studies
Trumpington Street
Cambridge CB2 1AG, UK
Tel. +44 (0)1223 766592 Fax. +44 (0)1223 339701
Email c.smallman@jims.cam.ac.uk

ABSTRACT

We use a 'reflexive' institutional perspective to examine the potential impact of the current drive towards a digital economy in Asia's developing countries and the growth in Internet technologies, upon social, environmental, and economic axes of sustainable development in the region.

Conventional institutional perspectives recognize the role that formal and informal 'rule-setting' by Governments plays in shaping corporate organizational behavior and performance. However, the reflexive impact of market and economic transformations on state institutions and policy has received less attention. Equally, the performance assessment of economies and sectors within the institutional perspective is confined mainly to an exclusive set of purely economic indicators. We aim to widen the institutional perspective by elucidating the impacts of economic and industrial change on state institutions, and the implications of both of these processes for a wider set of economic, social, and ecological indicators, or 'sustainable development'.

As a specific case of institutional transformation, we explore new constraints and opportunities in Asian developing countries as they come to terms with economic changes brought by the New Economy. After decades of uninhibited growth, which brought rising material standards of living, the Asian financial crisis instigated the transformation of existing industries and the rise of new ones, especially in the highly entrepreneurial information and communications technology sectors. At the same time, sustainable development, traditionally considered a luxury unaffordable in the rapidly developing states of Asia, has become an imperative for governments and businesses, as public health in very large Asian cities continues to deteriorate. Thus, the primacy of economic performance over social and ecological goals is being reconsidered.

We argue that the trajectory of sustainable development in Asia depends upon whether or not Asian governments can continue to integrate industrial and social policy in an environmentally sustainable way. This case in turn has implications for other governments and businesses seeking to achieve social and environmental goals in the context of the New Economy.

KEYWORDS

Institutionalism; Sustainable development; the new economy

¹ Beth Ahlering is a doctoral candidate and holds a British Safety Council Research Studentship.

² Corresponding author: Clive Smallman is a Senior Research Associate and holds the James Tye - British Safety Council Fellowship in Safety Health and Environmental Management.

New Institutionalism

New institutional theory takes a systems perspective of the impacts of institutions and other bodies or actors surrounding organizations, which dictate social and organizational behavior (Scott, 1995), which in turn affect organizational processes and decision making. At a fundamental level, institutions set formal and informal 'rules of the game', which govern societal relationships and bind the behaviors of organizations (Hoskisson, Eden, Lau & Wright, 2000). The aim of such interventions is to reduce instability, promote certainty, reduce transaction costs and improve communication (Harriss, Hunter & Lewis, 1995; North, 1990; Onis, 1995). New institutionalism is thus concerned with identifying the role and contribution of state institutions in economic performance (North, 1990; Olson, 2000).

Institutions are assumed to be stable in new institutional theory, the independent variable which shapes the performance of economic organizations (Olson, 2000). Organizations and firms respond to their institutional environment through a process of 'isomorphism', reproducing internally the constraints imposed by external institutions (Powell & DiMaggio, 1991). Furthermore, new institutionalism has not only remained a realm of theoretical exploration. It has also featured widely in comparative descriptions of the role of states and has served as the basis of policy prescriptions for states seeking to serve as conduits for foreign investment (Evans, Rueschemeyer & Skocpol, 1985, World Bank, 1993).

The assumption has been that state institutions play an optimal role in ensuring high economic performance of firms by creating and protecting property rights and lowering transaction costs. The insights afforded by this perspective have served to predict performance in terms of economic indicators. The organic growth of firms in developing countries may have been limited by institutional constraints (Peng, 1997; Peng & Heath, 1996; Suhomlinova, 1999), and particularly those relating to factors of production and culture (Child and Lu, 1996). Institutions have also been found to enable strategy, whereby governments work with firms to encourage them to adopt and play an active role in the institutional environment. In effect such firms then redefine and move beyond the initial constraints, but on the way become institutionalized (Lee and Miller, 1996; Oliver 1991; Soulsby and Clark, 1996).

'Shortcomings' of New Institutional Theory

Non-reflexivity

Most institutional perspectives focus on the defining role of government institutions in setting the rules of the game. Recently, institutionalism has faced the argument that the global economy significantly limits the ability of state institutions to influence corporate behavior and performance (Hay & Marsh, 2000). Moreover, institutional theory does not approach the topic of structural economic and industrial change, and the ensuing institutional crisis of obsolete industrial policy. Whilst many analyses using an institutional lens have been used to explain disparate economic performance of firms and economies in stable circumstances, the mirror image proposition has seldom been considered. Changes in the structure and functioning of economies (both national and global) can transform institutions.

Institutions are, in themselves, organizations, which evolve and adapt to new global and local economic conditions (Weiss, 1998). With industrial transformations, state institutions must also adapt to changing roles as industrial policymakers, regulators, and standard-setters. Thus, states and corporations co-evolve and transformation in one realm naturally affects the other.

Focus on Purely Economic Indicators as Measures of Performance

New institutionalism has been largely concerned with the effect of institutions on economic performance, measured in terms of firm-, sector-, and national economy-level indicators (North, 1991; Olson, 2000). Hence, performance has been considered in terms of indicators such as profits, revenues, sales, and GDP. Yet, institutional goals and firm performance must be reconsidered in light of recent critique of purely economic indicators as measures of ‘development’ and ‘progress’ (World Bank, 1997; Atkinson, Duborg & Hamilton, 1997). Furthermore, from our perspective, the definitions of success are lacking, since public and eco-systemic health, whilst undoubtedly under threat, are not explicitly discussed within prescriptive institutional models. As sustainability metrics, these strongly suggest fundamental problems with current industrial patterns, as well as with the institutional paradigm. Perhaps these are signals that a marked change in production patterns and process are required; in Schumpeter’s (1934) words ‘creative destruction’ is needed to meet the challenge set by the requirement for sustainable development (Hart & Milstein, 1999).

Widening the Performance Lens: Sustainable Development

When sustainable development agendas were first formulated by the World Commission on Environment and Development (1987) and the UN Conference on Environment and Development in Rio in 1992, the Cold War had just ended, ‘globalization’ was a relatively new concept, and the Internet was still in its infancy. Much has changed since, and at a quicker pace than we could have imagined. The globalization of financial and product markets, the growth of new information and communications technologies and businesses, and the liberalization of markets for services (characterized as the ‘New Economy’) poses challenges and provides opportunities for governments pursuing rapid socio-economic development, but ultimately affects sustainable development.

Sustainable development is defined as:

“... a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as with present needs.”

World Commission on Environment and Development (1987, p. 9)

However, in the context of this work, we use a more ‘operational’ definition, whereby sustainable development means balancing economic and social forces with planetary as well as local ecology in a way that does not endanger current or future generations (Hiwaki, 1998).

Essential to developing such balance is the manner in which corporate responsibility affects the reconciliation of economic, social and ecological aspirations by governments worldwide. This is especially pressing if the limited success of the past 25 years is to expand to the required level. Sustainable development requires that we address issues around product innovation and the consumption of less raw materials, just as much as those concerned with energy and material efficiency. Indeed, it is feasible to regard the ‘challenge’ posed by the need for sustainability as an opportunity to develop radically new approaches to business and production. However, this also means we need to develop alternative means of appraising performance and value-added (Hart & Milstein, 1999). What this also means is that governments must find ways by which to curb corporate ecological excess, whilst simultaneously nurturing innovation. It is also fair to say that such an approach is required of governments and firms in all countries (Reilly, 1999).

In this paper, we expand the institutional perspective by analyzing the particular case of institutional transformation in Asian developing countries owing to the rise of the New Economy in the region. Furthermore, we go on to consider potential impacts of economic and institutional transformation in this

region on social and ecological performance indicators, expanding institutional theory beyond the traditional focus on economic performance indicators.

INSTITUTIONAL TRANSFORMATION IN THE NEW ECONOMY: THE CASE OF ASIAN DEVELOPING COUNTRIES

The Role of Institutions in Developing Countries

While developing states have pursued varying social and industrial policies and degrees of openness, several characteristics of the developmental state model are common to all or most of them (Evans et al, 1985; World Bank, 1993):

“a determined developmental elite, relative autonomy, a powerful, competent, and insulated economic bureaucracy, a weak and subordinated civil society, the effective management of non-state economic interests, and the necessity of repression, legitimacy, and performance”

Leftwich (1995)

In essence, this is an institutional theory perspective and there is little doubting the importance of institutions in developing countries (Hoskisson et al, 2000). The developing countries of Southeast Asia are generally regarded as miraculously successful. Certainly, from an economic perspective some have outstanding records. However, fundamental problems oriented around political economy, associated with the possible application of the developmental state model as a paradigm for improvement in other emerging economies, have been raised (Levi-Faur, 1998). It seems that neither of the most frequently espoused paradigms (neo-Marxism and neo-Liberalism) are particularly effective (Onis, 1995).

THE ‘NEW ECONOMY’

Developed economies are now seeing a partial and problematic shift from a manufacturing and manual base towards a service and knowledge ethos (Eisenberg, 1997, p. 57). In parallel, the developing countries of the Pacific Rim exploit new technologies and their comparative advantage in labor costs to good effect, building on their innate respect for the power of education and saving. Indeed, the structures of comparative advantage in raw materials, land and production power may be overcome by investing in a well-trained and highly educated labor force. Furthermore, land in general is declining in value and investment, as well as growth, is inversely related to land holdings (Rosecrance, 1996, p. 41). Now, to paraphrase Thurow (1996, p. 115), “[almost] anything can be made [almost] anywhere and sold [almost] everywhere”. The result is that the prospects for developing countries (Drucker, 1980, pp. 170-177; Grabowski, 1994) look very encouraging.

The implications for organizations of the shift towards knowledge-based industries are clear (Davis & Botkin, 1994). It will become increasingly difficult to gain a competitive advantage, as it is presently understood (Evans & Wurster, 1997, pp. 79-82; Teece, 1998, pp. 55-56; Thurow, 1996, pp. 65-74). There are clear differences in the underlying economics of “processing bulk goods” and “crafting knowledge into products” (Arthur, 1996, pp. 79-80). Essentially the economics of mass production are such that these “congealed resources with little knowledge” are sold according to the principle of *diminishing returns* (Arthur, 1996, p.76). On the other hand, knowledge based products are “congealed knowledge with little resources” the production and sales of which operate under the principle of *increasing returns* and its associated characteristics (Arthur, 1996, p.77; Teece, 1998, pp. 57-59):

- market instability (where a product takes a lead, the market starts to favor it),
 - multiple potential outcomes (under different historical events a substitute product might have won through),
 - high risk because of inherent uncertainty in the development of knowledge based goods (Howitt, 1996, p. 100; Teece, 1998, p. 64),
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- the ability to lock in a market (Teece, 1998, p. 58),
 - the possible predominance of an inferior product, and
 - super normal profits for the winning product.

What this leads to is a marked difference in the characters of competition and managerial cultures associated with these differing spheres of business. The repetitive nature of *mass* production requires a corporate (and governmental) environment that focuses upon control and planning; this favors hierarchical organizational structures. This is concerned with optimization of production, quality and costs (so maximizing diminishing returns), so providing the basis for competition (Arthur, 1996, p. 79). As discussed above competition in *knowledge-based* products is about “winner take most” (Teece, 1998, p. 59), and management’s mission must be to find the “next big thing”. Speed is the very essence and managerial communication cannot be side tracked by hierarchical structures. Organizations competing in these fields are necessarily flat in order to effect rapid communication between senior management and the small dynamic teams that deliver innovative products (Teece, 1998, p. 59; Thurow, 1996, pp. 65-87).

The move away from hierarchy, induced by the move to knowledge-based goods, is not limited purely to organizational structures. Evans & Wurster (1997, pp. 73-75) also identify a shift in the structure of consumer decision making. In “traditional” markets they note that economic choice is regulated by the relationship between *reach* and *richness*. The former is simply the number of people exchanging information on goods or services. The latter is a construction of the amount of information on goods or services that may be transmitted at any one time, the degree to which information is customized, and the degree of interactivity in the transmission process. Rich information on a product can only reach a relatively narrow market. Conversely poor information can reach a much broader audience.

The advent of the information society (the spread of information and computing power through home and office networks) transcends this traditional relationship, since it allows more people to access more information. As communication bandwidths available to consumers continue to expand and computers continue to fall in price (Dell, 1998), so the power of the New Economy will continue to grow. This will encourage the further development of “hyperarchies”, such as the Internet (Evans & Wurster, 1997, p. 75). These structures, it seems, deconstruct both value and supply chains, so presenting a considerable challenge to firms, since strategies, corporate structure and corporate identity must each be rethought to cope with the consequent fluidity. At perhaps its most fundamental level this means that manufacturing location will be less important than the quality of the brand (Hall, 1989; Thurow, 1996, p. 115).

Amongst these newly emerging organizational and politico-economic structures (Rosecrance, 1996, pp. 39-41) is the *virtual corporation* (Dell, 1998). Herein modern communication and transport technologies mean that production capability need not be located in the country from which it draws its investment and product design (Wind & Main, 1998, pp. 247-266). A step further on from this, is the trend towards outsourcing with businesses retaining only their core activities, resulting in what Dell (1998) terms “virtual integration”. What this essentially means is that the value chain fragments, with each business element able to optimize its individual competitive advantage, whilst working in equitable collaborative arrangements. Contrast this with the compromise effected in traditional organization structures (Evans & Wurster, 1997, pp. 79-80) that are closed business systems, where relationships with suppliers are governed by the purchasing power of their buyers.

An economic level above the firm and its network is the *virtual state*, where highly successful economies exist with little or no production sector. Switzerland is perhaps the leading example in Europe with GDP per capita in 1999 of \$26,400³ comparing more than favorably with Germany’s forecast of \$22,700. One of Switzerland’s leading companies, Nestlé, has 98 per cent of its production capacity abroad (Rosecrance, 1996, p. 39).

Australia and Canada provide other outstanding examples of how it is possible to survive and prosper (with 1999 per capita GDP respectively at \$22,400 and \$21,200) from sales of raw materials and off the back of media, telecommunications, and, in Australia’s case, finance. America is also increasingly ‘farming out’ its mass production capacity throughout the world; its corporations are increasingly searching for opportunities in “high value” services such as telecommunications (Reich, 1991, p. 47).

³ Source of all 1999 GDP figures: CIA World Fact Book, 1999.

These are each examples of what Rosecrance (1996, p. 39) terms “head” nations, whose expertise in design, marketing and finance may be harnessed by “body” nations.

“Body” states, such as China (1999 per capita GDP \$3,600), and India (\$1,720) offer cheap production capacity coupled to a large labor force in dire need of paid employment. Russia too falls into the body group (1999 per capita GDP \$4,000) but is deemed less attractive by dint of draconian commercial law, and an anarchic, outdated transport system. However, foreign direct investment, as well as assistance from international bodies such as the World Bank will ultimately enable China, India and Russia to become world centers of production. Why production and not knowledge work? As Landes (1992, p. 62) notes, whilst knowledge should be the freest production factor, its distribution is limited by infrastructure – few developing nations have a sufficient institutional basis for training people in knowledge skills, but this is not necessarily the case across southeast Asia.

The New Economy, enabled by the Internet, is speeding the diffusion of information and accelerating the rate at which developing countries acquire technology. Hence, the New Economy is one in which greater worldwide equity should prevail, through its effects upon the transformation of emerging economies (Economist, 2000).

THE NEW ECONOMY AND THE TRANSFORMATION OF THE DEVELOPMENTAL STATE

The stakeholders in the New Economy in Asia include multinational corporations in telecommunications and information infrastructure, domestic and ‘strategic information industries’, content providers, service providers, network providers, governments, and end users including individuals and businesses (Lovelock, 2000).

Some go as far as to credit the New Economy with pulling Asia out of its post-crisis slump, with computer and semiconductor exports growing and Internet companies emerging (Lewis, 2000). The rise in new communications and information technology companies are both a product and a cause of financial and product market liberalization in the region. Secondary industries are also connected to this process, especially hardware, software, and infrastructure companies. In addition to improved productivity and efficiency enabled by e-technologies, the growth in jobs and capital in these sectors is beginning to emerge in Asia. E-commerce sales in the region have been forecast at \$1.6 trillion by 2004 (Sanders, 2000).

Several accounts of post-crisis Asia have highlighted the imperative for transformation exerted upon the Asian developmental state model by increases in global finance in the region, the transformation of the telecommunications sector and the expansion of hi-tech sectors. These factors necessitate change and transparency in old conglomerates and government-business relationship, lowering prices and improving services by increasing competition, and in fostering new sources of jobs and capital, respectively (Biers & Goad, 2000). However, the impacts of the New Economy in Asia with respect to social, environmental and economic sustainability have apparently not been considered. The implications are found both in the way the New Economy is transforming the efficacy of industrial policy in developing countries, as well as the more local impacts of hi-tech and telecommunications industries on sustainable development. It may well be that

“we face not the end of the state, but rather the diminished efficacy of political and economic governance that is rooted in geographic sovereignty and in mutually exclusive territorial jurisdiction”

Kobrin (1997)

So what is leading to this ‘diminished efficacy’?

Market Change

Structural and global market changes in information and communications industries are necessitating change in how the developmental state relates to this sector regionally. Typically, the Asian developmental state has used a set of policy instruments including 'conditionalities' (usually necessitating joint ventures with governments or domestic firms and local content requirements) and special incentives to attract foreign investment in the information and communications sectors. In parallel governments have maintained control over the ventures in order to shape them to domestic economic growth and developmental goals (Leftwich, 1995).

For example, in the telecommunications sector, whilst some Asian governments undertook partial privatization programs in the early 1990s in the telecommunications sector, many of them kept controlling shares of up to 80 per cent (Lovelock, 1998). Yet with most Asian developing countries joining the World Trade Organization, telecommunications deregulation and liberalization have been mandated, and privatization encouraged. Privatization is on the horizon for other reasons as well. In the wake of the Asian crisis, most governments do not possess the ability to promise the huge levels of investment needed by this rapidly changing sector. In the information sector in the region, global demand for semiconductors and hi-tech equipment is driving export growth, and integrating Asian producers further into the global economy for Internet infrastructure, making this sector one of the most dependent on global, rather than national, markets. South Korea is the world's largest producer of memory chips and Taiwan's independent semiconductor foundries are the world's most expansive (Lovelock, 1998). Thus, the state's role as owner and decision-maker in communications and information industries is significantly challenged.

On-line Demand

Growing on-line demand in the region and new competition is forcing change in the bulwarks of the Asian developmental state model: the huge, government-favored conglomerates. Asia currently comprises eight per cent of Internet users worldwide. In the wake of the Asian crisis, many of the region's business oligarchs are reformulating their property, heavy industry, and retail empires in light of the emerging Internet economy. Many of the old conglomerates, are forming new ventures and subsidiaries focused on Internet content provision and access, seeking newer and flatter management styles, and transferring their business processes and offerings to the online medium (Einhorn, 2000). The resulting gains in efficiency, according to East Asian analysts, could result in cost savings of up to 20 per cent (Moore, 2000). However, the restructuring of the conglomerates, apparently engendered by e-commerce (or window dressing, as some skeptics believe), coincides with the opening and liberalizing of telecommunications and Internet Service Provider markets regionally (and indeed these processes feed each other). Thus a new degree of competitive pressure is emerging from firms such as *Yahoo* and *America Online* entering Asian markets. Similarly, the rise of a young new entrepreneurial class, often Western educated and repatriated, has brought with it a challenge to the monolithic corporate cultures and networks of conglomerate Asia.

Government-Business Relationship

Asian government-business relationships, which were significant determinants of investment and management in previous decades and industries, have also been transformed by the rise of the hi-tech sector. The rapid evolution of communications and information sectors (and their convergence) are apparently difficult for Asian developmental state industrial policy machines to grasp:

"The legal, regulatory, and business environments required to support enterprise development and growth in the digital economy are also significantly different from those needed for

traditional enterprise. This presents challenges to governments and regulatory authorities, who must adapt national and international policies in a pro-enterprise way”

(Irish Department of Enterprise, Trade and Employment, 1999)

Additionally, so-called “post-industrial” technologies like telecommunications and multimedia software are changing so fast that even the most nimble governments find they cannot respond quickly enough (Hirsch, 1993). Also, of course, in the wake of the financial crisis, the government funding and will to finance the massive infrastructural and technological investments required by the growing demand for telecommunications and new media goods and services have been significantly curtailed. States are relegated to the role of market conduits and facilitators. This manifests in Asia through developmental state governments attempting to implement changes that improve the e-business climate within their borders in order to attract investment. This includes the development of appropriate infrastructure, cost effective real estate, legal systems and capital markets that nurture knowledge-based industries, and liberalizing telecommunications, but above all requires investment developing a workforce with the right level of technological skills (Bickers, 1999). The role of the developmental state is relegated to institutional conduit rather than financier or technocratic guardian of the hi-tech industry.

Some Asian developing countries have taken longer than others to adjust to this new role. Thailand is an example of a developmental state that has attempted to use old-style industrial policy to guide development of the telecommunications and Internet industries operating in its domain. When the Thai Ministry of Commerce’s Business Economics Department offered a free web-site for local firms to engage in e-commerce, only about 100 firms actually developed interactive sites through the program. Thailand’s Internet infrastructure also remains under state control, meaning that prices for Internet service provision are higher and dissemination of access is less developed than in neighboring countries such as Malaysia. Not only does Thailand’s old-style developmental state not encourage growth in the sector, it creates disincentive within the private sector for developing infrastructure and acts as an impediment to the development of internal markets. This in turn limits the export opportunities available to local firms that are attempting to reach global markets or integrate themselves into the supply chains of global manufacturers (Crispin, 2000). The Thai stock market does not list one ‘.com’ company and has been largely ignored by global tech-hungry investors. Thus, the price of maintaining the old style of developmental state policy may be that various areas remain outside the e-economy.

Most importantly for this study, such challenges to the coordinating role of developing countries, and the market-facilitating posture usually adopted by developing countries as a result, have direct and indirect impacts on sustainable development in the region, which we will now explore.

The New Economy and Sustainable Development in Asia

Economic Axis

The developmental state policies of East Asia are credited with the region’s prolific economic growth, which increased its share of global GDP from four per cent in 1960 to more than a quarter by the early 1990s (Hirsch, 1993). The main characteristic of successful developing countries has been a strategic focus on economic development that supports a disciplined market-guiding role for the state (Grabowski, 1994; Harriss et al, 1995; Lovelock, 1998; North, 1990). This role is effected through the creation of elite coordinating bodies, which use their considerable influence to develop public-private partnerships, in order to forge links and exercise considerable influence upon essential industries. The practice of targeting strategic industries for investment, controlling capital flows, and maintaining some import barriers to allow domestic industries to flourish, are a hallmark of orthodox developmental state industrial policy.

This neo-liberal perspective promotes a reliance upon free markets and competition as vectors for industrial success (Onis, 1995). Furthermore, success seems to be particularly narrowly defined here, restricted as it is to economic measures.

The post-crisis technology revolution in Asia is fostering many economic changes. "As part of the wider technology revolution, which encompasses phenomena like the Internet, ubiquitous communications, and unlimited computer processing capacity, e-commerce offers great promise to the Asian economies. Enthusiasts assert that e-commerce will sweep away market inefficiencies, such as excessive transaction costs, asymmetric information, and natural monopolies, breaking up arcane market barriers" (Asian Business, 1999). From the microeconomic perspective, e-commerce has the potential to make business processes of all kinds more economically and temporally efficient. Putting finance, distribution, and business processes online could potentially affect up to 30 per cent of the wealth-generating processes, which comprise GDP (Perez-Estevé and Schuknecht, 1999). On-line purchasing has the advantage of increasing price transparency and competition, thus lowering prices. Smaller firms are particularly likely to be able to benefit from pooling their buying power and bargaining for purchases of indirect inputs such as office equipment and electricity (Goldstein and O'Connor, OECD). The potential access to spatially diverse markets offered by the Internet is another significant advantage, since worldwide business to business and business to customer e-commerce allows countries to specialize and develop economies of scale. This reinforces the benefits of trade liberalization (Goldstein and O'Connor, 2000).

Another significant change is the rise in new types of finance in the region, which inevitably have effects on corporate governance practices. In light of the struggles faced by Asian domestic banks, many Internet start-ups and companies adopting e-commerce in Asia are beginning to list on the NASDAQ. Furthermore, Asian developing countries are seeing the rise of their own versions of hi-tech stock markets, such as Hong Kong's Growth Enterprise Market, to foster growth of the sector (Biers and Goad, 2000). Equally, foreign lending is moving into the region with vigor, both in the form of venture capital and bank lending. The results could be positive for economic growth, consequently demanding changes in corporate governance and financial transparency, leading to a higher probability of economic sustainability and accountability.

However, increased reliance on equity financing means that companies may become more shareholder focused. Traditional companies living under the financing and industrial policy umbrellas of developing countries had specific economic and social goals set for them by state 'technocrats'. Financing by way of equity markets may narrow the stakeholder field of many companies to a focus on global shareholder returns at the expense of local economic and social obligations. Additionally, there is significant concern, and rightfully so, that the short-termism and 'bubble'-producing 'frenzy' involved in Western speculation in Asian markets will undermine longer term economic sustainability. Crispin & Mitchell (2000) note that stock market deregulation, especially in Southeast Asia, has not consistently imposed disclosure rules and accounting standards for listed companies. Whilst increasing valuations have certainly fueled growth and entrepreneurship in the sector, the dependence on global and regional stock market capital leaves them, and whole parts of developmental state economies, badly exposed and vulnerable to changes on NASDAQ and other hi-tech stock markets regionally. In this context, any downturn in NASDAQ would have severe consequences for Asian technology start-up firms, not to mention the rest of the regions listed companies. (Saywell, et al 2000).

Equally, in order to compete with the more risk-comfortable NASDAQ as a source of finance, Asian stock markets, such as Hong Kong's GEM and Singapore's SGX, have relaxed some of their listing requirements (for example, a proven record of profits). Whilst these arguments are common in the debate surrounding hi-tech stock markets, the potential social impacts of economic non-sustainability are less well understood. An economic slowdown in the region's hi-tech industries not only affects economic growth, but also slows job creation and the formation of new post-crisis social security systems at a time when wide-scale restructuring is leaving many households vulnerable. As finance markets globalize, a disjunction is created between electronic markets and political geography (Kobrin, 1997).

Additionally, as a result of the rise of the New Economy, the conglomerates that were the cornerstones of economic growth in developing countries in the past face structural and competitive challenges. Small firms can buy in services from outside more cheaply, and, in overall terms, barriers to entry should fall

(Goldstein and O'Connor, 2000). Thus, the rise of the New Economy and its technologies may set the stage for further corporate restructuring and 'down-sizing' in the region, straining social safety nets and household resources.

Others doubt that the requisite precursors to the development of a strong hi-tech industry and online business processes really exist in Asian developing countries:

"Asia today still lacks the kind of super-liquid and vast capital markets, venture-capital networks, world-class universities, risk-taking culture, restructuring ethos, and high-tech talent pool that set the stage for the amazing run of growth the US has had since the mid-1990s"

Bremner and Ihlwan (2000).

Thus, the picture of economic sustainability in the hi-tech industry in Asia is a complex one.

Social Axis

Through linking industrial development to social goals, Asian developing countries have markedly and progressively raised the standard and level of provision of education, health and housing, as well as improving transport infrastructure (Leftwich, 1995). Many of these states rank highly on the human development index (HDI), a combined measure of national income, life expectancy, and educational attainment. Similarly, many have succeeded in achieving high personal savings rates and relative income equality, while keeping inflation low and interest rates stable (Hirsch, 1993).

The social impact of the New Economy has yet to be explored in great detail, though the 'network society' has been defined as a qualitatively new form of social organization (Bell, 1999; Castells, 1996). Most significantly, perhaps, is that the Information Society has grown up largely without a 'social contract', at a time when the traditional social safety nets of developing countries are facing challenges. As Braman (1993) elucidates, the most recent stage in the emergence of the information society includes

'the harmonization of communication systems of the same type across national boundaries, of communication systems with each other, and of communication systems with other types of social systems'

The way that this is manifesting in Asian developing countries necessarily transforms the social contract between industrial policy and national welfare, which defined the growth era.

The 'digital divide' has quickly become a euphemism for all that is potentially dangerous about differential access to the Internet, both within and between countries. Information access and the development of communications network infrastructure in developing countries have remained high on lists of developmental state priorities (Cruise-O'Brian, 1983). Yet, the degree of access is variable, even within Asia. In Singapore, for example, 40 per cent of households have a computer while in China the figure is 1.7 per cent (Bremner and Ihlwan, 2000). Concern over the digital divide has focused on the ways in which the Internet can empower both consumers and citizens, and how lack of access to this potentially valuable tool can create a new form of disadvantage. As consumers, the economic advantages of being connected have been equated to having more perfect information about markets and prices. Socially, the benefits to citizens have ranged from having access to more information about political processes and decision-making to gaining knowledge from various online sources previously inaccessible (Arunachalam, 1999). Community access, especially in rural areas, to the Internet has yielded benefits towards economic development, but also has the potential to cause social and cultural disruption in the process.

There are many projections of the potential of the New Economy to create new jobs. Low unemployment levels, which coincided with the rise of the New Economy in the United States, led many to believe that these growth industries are a reliable source of job-creation and wealth. Yet in developing countries, facing liberalization of service markets at the behest of the World Trade Organization and

struggling to absorb redundant workers following 'rationalization' in conglomerates, the job contribution of the New Economy may be less clear. Additionally, the increased competition faced by local companies from both e-commerce and from market liberalization may cost jobs in the short term (85 per cent of money spent by Asian consumers on e-commerce currently goes to US companies). Additionally, Asian retailers may face a loss of market share to online global rivals, making long-term job guarantees precarious (Jordan, 1999). There is evidence that work patterns are changing as well with the rise of the digital economy. These promise to affect not only the number, but also the nature, of jobs in Asian developing countries.

The way in which the information economy transforms the typical revenue-raising activities of the developmental state has potential impacts for the social axis of sustainable development in Asia. The location of taxable income and the pressure for tax moratoriums present among many in the industry mean that e-commerce, an integral part of the New Economy in Asia, could significantly limit the available tax base through which developing countries have traditionally provided public and social services. Of course this depends on whether or not the Internet becomes the retail venue of choice for both producers and consumers. Even in the US, where Internet penetration is now at over 50 per cent, Internet sales only accounted for less than one per cent of total retail sales in 1999 (Burns & Taylor, 2000). In the US, it is predicted that the moratorium on Internet tax will cost state and local governments up to two per cent of their normal tax base in the next five years (Banham & Orton, 2000). But regardless of the current state of infrastructures, the trend is towards growth, especially with the Internet evolving as a platform for global sourcing and supply chain coordination. The trick is for governments to ensure equity between orthodox retail channels and e-commerce firms, whilst balancing their need for tax revenues (Pasternak, 1998).

E-commerce in effect can dissipate the connection between a specific location and an income-producing activity, thus rendering traditional territorial tax collection problematic (Kobrin, 1997).

Equally, the access to information and ideas via the Internet has the potential to challenge the political control exerted over civil society by 'developmentalist' elites in government. By nature the Internet is essentially subversive, since there are no easy means of controlling access or content, and the expanding variety of access points (most recently through WAP phones) further resists effective control (Choucri, 2000).

Internet access may loosen government control over information in Asian developing countries. While some Asian developing countries such as South Korea and Taiwan have already shifted, through popular pressure, to more democratic forms, others are just beginning to stir. The Asian economic crisis severely undermined the legitimacy, based on sustained economic growth, enjoyed by many Asian developing countries for many years. Additionally, the rise of the New Economy in Asia has provided governments with a new impetus to relax political control: entrepreneurship requires the ability to think creatively and outside existing paradigms. Thus, for example, Singapore's developmental elites have invited Western experts to their bureaucracies and schools to teach 'lateral thinking'. Some Asian 'developmentalists' fear that the top-down control, which was necessary in the era of the single-minded pursuit of growth, may undermine bottom-up entrepreneurship, the most important driver of the New Economy. However, the free flow of ideas on the Internet and freedom from censorship are not guaranteed. Nevertheless, the New Economy may prove to be an important political and social change agent in the region.

Ecological Axis

The ecological axis of sustainable development has been, unfortunately, a rather low priority for most Asian developing countries in the pursuit of economic growth and social cohesion. Environmental protection had largely been considered a luxury for developed countries and a concern for a later stage of development, and state institutional interventions in industrial planning in Asia have rarely focused on environmental performance. However, the imperative of environmentally sustainable development has come to be a more important goal for Asian developers as the economic costs of neglect have become apparent. For example, the Indonesian fires of 1997, the deterioration of public health in very large

metropolitan areas, and the economic and environmental costs of traffic congestion have begun to have tangible impacts on economies and welfare in the region, and Chinese cities currently have 14 times the level of suspended particulates as do US cities (Davis, 1997). According to the World Health Organization (1992), the majority of the 15 most dangerously polluted cities of the world (with particulate and emissions concentrations significantly higher than healthy levels) are large Asian cities. Additionally, with climate change encroaching, Asia's largely commercial coastal regions face significant threats. The imperative for action on environmental protection grows daily.

Coinciding with the rise of the New Economy has been a significant improvement in resource efficiency, particularly energy efficiency. The energy efficiency of the US economy improved by only one per cent per year, between 1986 and 1996. In 1997 and 1998, it improved by three per cent each year, and this is the most energy profligate nation in the world at a time of very low energy prices (Hewett, 2000). Obviously every industry has a different environmental impact. Some literature on preliminary impacts of the new economy on environmental indicators such as energy efficiency, 'dematerialization'⁴, and the material content of goods and services, has indicated that there may be cause for hope that the hi-tech sector may replace more energy-intensive or 'pollutive' industries as a source of growth in economies worldwide. In this scenario, knowledge and information replaces concrete goods as products, and the ecological impact of production processes is lowered.

However, some of these attributions may be overly optimistic, and there is danger in seeing the digital economy as a panacea for environmental problems. The hi-tech sector itself has been notably lax with respect to its environmental responsibilities (e.g. the production process of silicon chips has an extreme ecological impact)

As with any cost-saving measure, where the digitalization of business processes leads to gains in efficiency and profitability, companies may use gains to reinvest in increases in production, and a net increase in resource use and pollution may well follow. Thus, energy and resource savings created by the Internet economy are not simply linear results of the process of digitalization; they, in turn give rise to potential increases in production and environmental strain. Energy-use itself, through the proliferation of information and communications technologies, combined with rising population levels, may prove to be environmentally unsustainable. Finally, there is the likelihood that by creating a true 'global market' through the expansion of e-commerce to Asian consumers, the New Economy will also be a consumer society. Increases in global levels of consumption may not be ecologically sustainable (UNRISD, 2000).

⁴ Referring to the rise of a "new capitalism", in which the most important assets, and most of the products, are intangible, and within which competition will turn on the application of knowledge, ideas and creativity to commercial ends' - Leadbetter, 1998

Conclusion: ALTERED STATES

The New Economy in Asia is changing the balance of economic, social, and ecological impacts of the private sector in the region away from strong state control. Hence, the globalization of both the financial and operational structure of the growing telecommunications and information sectors in Asia means that the decisions that impact sustainable development will now be made by a devolved governance network of public, private, and financial sector actors. Asian developmental state technocrats are no longer able to formulate their traditional alignment of industrial and social policy.

Just as in other regions and decision-making fields, a successful move towards sustainable development may depend less on the existence of public and private sector social, environmental, and economic policies, and more on the way in which these are successfully integrated. However, central to this process must be public recognition and deliberation of the interrelations between the New Economy and sustainable development. We are at the stage where we, as policymakers and businesspeople, still have the opportunity to shape the trajectory of the New Economy to ensure that its proven economic promises are underwritten with a commitment to ecological and social sustainability.

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